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Some North American Botanists.

VI. DR. WILLIAM BALDWIN.

In the southeastern corner of Pennsylvania, just north of the famed Mason and Dixon line, lies the county of Chester, picturesque, historic and fertile, but specially prolific for a century past in cultivators of botanical science. Within its original limits were born the Bartrams, father and son, and within its present limits were born Humphrey Marshall, Dr. William Darlington and his coadjutors David Townsend and Josiah Hoopes, not to mention the Jacksons, father and son, nor the brothers Pierce, who, perhaps, were cultivators rather than botanists.[1]

And in the township of Newlin, in this same county, on the 29th of March, 1779, was born William Baldwin, the subject of this sketch. His father, Thomas Baldwin, was a member and an approved minister of the society of "Friends." He gave to the son such rudimentary education as the common schools of the vicinity could furnish. But the youth thirsted for knowledge, and soon became a teacher, daily acquiring for himself and imparting to others such store of information as was at his command. While thus engaged his thoughts were turned to the medical profession, and he became the pupil of Dr. William A.

[1] John Bartram was born at Darby March 23, 1699, and died in 1777. His son William was born at the same place Feb. 9, 1739, and died in 1823. Humphrey Marshall was born at West Bradford Oct. 10, 1722, and died in 1801. John Jackson was born at London Grove Nov. 9, 1748, and died Dec. 20, 1821. William Darlington was born at Dilworthstown April 28, 1782, and died at West Chester April 23, 1863. David Townsend (for whom *Townsendia* was named) was born in Pughtown Dec. 13, 1787, and died in West Chester Dec. 6, 1858. Joshua Hoopes was born in Westtown Feb. 12, 1788, and died at West Chester May 11, 1874. William Jackson, son of John, was born at London Grove Nov. 7, 1789, and died there Oct. 29, 1864. Most of these dates were kindly communicated by Josiah Hoopes, Esq., himself a Chester county botanist.

Todd, of Downingtown, in the same county; and afterwards, in the winter of 1802-3, attended his first course of medical lectures at the University of Pennsylvania. Here he formed the acquaintance and secured the intimate friendship of Dr. William Darlington, who, while suffering from a severe attack of illness, received from young Baldwin assiduous kindness and attention, which he never forgot. After his first course of lectures at Philadelphia he resumed his studies with Dr. Todd, at Downingtown; and here he became acquainted with Dr. Moses Marshall, nephew of Humphrey Marshall, the well-known author of "*Arbustum Americanum*," and founder of a botanic garden at Marshallton. The nephew had also some botanical knowledge, and had been of material service to the uncle, both in the establishment of his garden and in the preparation of his work on American Forest Trees and Shrubs. Dr. Marshall seems to have first awakened Baldwin's taste for the study of the vegetable creation; and the rich collection of indigenous plants in the Marshallton garden served to strengthen this taste, which soon deepened into zeal under the instruction of Dr. Benj. Smith Barton, of Philadelphia.

In 1805 Baldwin received the appointment of surgeon on a merchant ship bound to Canton. Returning from China in 1806, he resumed the medical course at the University of Pennsylvania, and on the 10th of April, 1807, he received the degree of M. D. He selected Wilmington, Del., for the practice of his profession,[1] and soon afterward was married to Miss Hannah M. Webster, of that city, a lady of superior intellectual endowments, and favored with a finished classical education, unusual for that day. At Wilmington he devoted his leisure to the study of the plants of that vicinity, and while there, in 1811, he attracted the attention of Dr. Muhlenberg, of Lancaster, who sought a correspondence with him, which was actively maintained until Muhlenberg's death in 1815. Dr. Darlington has given this correspondence to the world, and the letters on both sides, ninety in all, are characteristic of the respective writers, and illustrative of the formative period of American botany. Botanical students of the present day, supplied with text-books and Floras of the most perfect kind, can hardly realize the difficulties of those early stu-

[1]Dr. Baldwin joined the Delaware State Medical Society May 4, 1811, the same year and time at which Dr. Gibbons became a member. Dr. Gibbons was long the Nestor of the medical profession in Wilmington, and was the father of Charles Gibbons, of Philadelphia, and of the Gibbons (brothers) of California, who have been of service to botany there.—*Minutes of Delaware State Medical Society, per Dr. Bush.*

dents, forced, as they were, to grope in the dark for differences between old and new, and perplexed by the conflicting synonymy and imperfect descriptions of the few books then accessible.

Pulmonary weakness forced Dr. Baldwin, in the autumn of 1811, to resort to a milder climate, and he removed to the State of Georgia, residing chiefly at Savannah and St. Mary's Here was a new and interesting field for botanical research, which he cultivated with great ardor, making long journeys on foot, with knapsack on his back, often entirely alone, penetrating far into the territory of the aborigines, among whom his peaceful principles and gentle bearing secured him a kind reception. In 1812 war with Great Britain interrupted these pursuits and called into use his professional abilities as surgeon of a gunboat flotilla stationed at St. Mary's. For two years he ministered to the sick and distressed with no other aid than that of his wife. After the close of the war he was stationed at Savannah, where he was brought into close and friendly communication with Stephen Elliott, author of the "Sketch of the Botany of South Carolina and Georgia." His correspondence during these years of Southern residence shows that, notwithstanding the interruptions caused by professional labor, and by war's rude alarms, he lost no opportunity for botanical research and for the acquisition of new material.

Near the close of the year 1817, he received an appointment as surgeon of the U. S. frigate Congress, which was to visit Buenos Ayres and other South American ports. His knowledge of natural history led to this appointment, and it was accepted with the hope that his failing health might be restored. His ship touched at Rio Janeiro, Montevideo, Buenos Ayres, Maldonado, San Salvador and Margarita. At all these places he made diligent use of his limited opportunities for collecting, and in the Philadelphia Academy are preserved many of the plants so collected.

From this voyage he returned in July, 1818, rejoining his famly at Wilmington. He now bent all his energies to the study of the material collected during his Southern residence, with a view to publication, under the proposed title of "Miscellaneous Sketches of Georgia and East Florida, to which will be added a descriptive catalogue of new plants, with notices of the works of Pursh, Elliott and Nuttall, to which will be added an appendix containing some account of the vegetable productions on the Rio de la Plata, etc." In September he writes Darlington: "I have to inform you that I go on *slowly*, and, I hope, the more surely. It will not do to hurry—there has been too much hurrying among our

botanists. But you may rely upon it, that nothing but death or disease will prevent me from going on steadily. Both interest and knowledge increase as I get along." The Southern *Cyperaceæ* now especially engaged his attention. His letters to Darlington and Collins, at this time, are full of critical notes and minute inquiries relative to the species of *Cyperus*, *Scirpus* and *Rhynchospora*, and he had nearly completed his elaboration of the plants of this order, and was engaged upon the genera *Paspalum* and *Panicum* among the grasses, when he reluctantly laid aside his work at a new and unexpected call. The government was preparing to send out a new expedition for the exploration of the upper Missouri, under the command of Major Long, to be accompanied by a corps of naturalists. Baldwin's friends, Darlington and Leconte, successfully urged his appointment as botanist, and prevailed upon him to accept. Hope of prolonging his failing health doubtless influenced his decision. In March, 1819, he made the journey over the mountains to Pittsburgh, where he joined his fellow-travelers. A small light-draft steamboat had been constructed for the long river voyage; but repeated delays ensued, and it was not till the 5th of May that the departure took place. From the beginning Baldwin seems to have had sad foreboding. On the point of departure he wrote Darlington: "I shall hold out as long as I can. Whether my remains are deposited on the banks of the Missouri or among my kindred at home, is now a matter of little consequence. For the sake of my family and the pursuits I am engaged in, I should wish to live a few years longer." In fact his strength was already failing, and only his enthusiasm and force of will sustained him. The boat proved unsuitable for her work, was leaky, damp and uncomfortable, requiring constant repairs. A stop was made at Cincinnati for a week, partly for repairs and partly on account of the alarming condition of Dr. Baldwin, who remained on shore with his friend Dr. Drake, until he rallied. As the boat made her slow way down the Ohio and up the Mississippi and Missouri, he chafed under the restrictions, both of military rule and of increasing weakness, and in his desire to make the most of the few opportunities allowed him for collecting, he doubtless exhausted his little remaining strength.

The following almost last words written on the 7th of July, have a sad interest: "The mortification and chagrin which I feel in being thus disappointed from time to time in my expectations of doing anything worthy of notice in this expedition, are inexpressible. Perhaps I do not support myself under it as I ought,

and may manifest a disposition too irritable; but when I reflect upon the period of life to which I have attained, the delicate state of health to which I am reduced, without the means of doing anything efficient (I fear) to restore it, the unfinished labors of eight years, which would be almost entirely lost in case of my decease; and, above all, the rising family which look to me for support, I can not but feel anxious." * * * On the 15th of July the expedition reached Franklin, Mo., and here Dr. B. was compelled to leave it. He found a hospitable home at the house of John J. Lowry, and there, September 1st, he died, in his 41st year. He left a wife and four children, the youngest then an infant. The friend who knew him best, says of him: "I have never yet had the happiness to be acquainted with any man of a more amiable and upright character, more faithful in the discharge of his duties, or more zealously devoted to the interests of science and the welfare of his fellow creatures."

Dr. Baldwin's published scientific papers were but two, and these were offered for publication just before starting on his last journey. They are:

1. An account of two North American species of *Rottbœllia*, discovered on the seacoast of Georgia. *Am. Jour. Sci. 1st series, I., 355. 1819.*

2. An account of two North American species of *Cyperus*, from Georgia, and of four species of *Kyllingia*, from the Brazilian coast and from the Rio de la Plata. *Trans. Am. Phil. Soc. Phila. New series, II., 167. Read Apr. 16, 1819.*

Fortunately his unpublished memoranda fell into the hands of Dr. Torrey, and though in a crude and fragmentary state, they were used as their author would have wished, as contributions for Dr. Torrey's Monograph of the *Cyperaceæ*, and for Dr. Gray's Monograph of *Rhynchospora* in *Annals of N. Y. Lyceum of Nat. Hist. Vol. III.* His herbarium was purchased by his friend Collins, from whom it went to Schweinitz, who bequeathed it to the Phil. Ac. Nat. Sci.

In preparing this sketch free use has been made of the Memoir prefixed by Dr. Darlington to the "*Reliquiæ Baldwinianæ*," and of the valuable correspondence there found. Other material consulted has been a series of letters from Baldwin to Zaccheus Collins, twenty-one in number, covering the last two years of Baldwin's life, contained in the "Collins Correspondence" in the library of the Philadelphia Academy, and a copy in Collins' hand of the botanical notes made by Baldwin on his last sad journey. See, also, Vol. I. of James' History of Major Long's Expedition, Philadelphia, 1823. J. H. REDFIELD.

Aster or Solidago?

In September last I found some rather anomalous specimens of a plant in the prairie near my house. Englewood, like other suburbs of Chicago and many western towns, has its houses scattered over the prairie, with interspersed patches of grass land as virgin as when the buffalo and Indian roamed over it. Such a piece of ground lies between my house and the school house where a part of each school day is spent. Hence, this vacant lot is passed several times a day on the way to school, or market, or postoffice, and any change of floral appearance quickly noticed. It is often the scene of a raid for specimens of any particular plant known to grow there when needed to illustrate a lesson in botany. Something of a specialty is made of the study of the *Compositæ* in the fall, and few escape the search of pupils and teacher for class work. For the past five years this has been the case, and I thought about every inch of that acre of ground was known. But, greatly to my surprise, there appeared, close to the side-walk, a plant I had never seen before. Was it a Golden-rod or Aster? But who ever heard of an Aster with yellow rays? was the second thought, on pulling up the specimen. Taking it to my room and examining it, it was seen to be unique, and not much time elapsed before the vacant lot was thoroughly searched and more specimens found. About all were single stalks, except one, in which more than a dozen stems sprang from the same root. They were about a foot high. All the stems from this root did not bear yellow-rayed flowers; some were white, some ochroleucous, some pale or sulphur yellow. It was evident that the habit of the plant was that of *Aster ptarmicoides*, Torr. and Gr., plenty of which, both single and many stalked, grew in the vicinity. But the flowers were considerably smaller than those of any *Aster ptarmicoides* observed, as proved by comparison, being about half an inch in diameter. The plant was smoother, and the leaves tapered below into a clasping petiole, or one tending to clasp, on some of the stems. In this it suggested *Solidago Riddellii*, Frank, growing close at hand. Could it be a hybrid, a cross between this *Aster* and *Solidago*, or some other *Solidago?* was the next query. Will genera cross? This led to the preservation of the plant. It was not dug up, but left to fruit, except a little cut off to get a variety of the flowers. A stake was driven beside it so that it might be identified when the flowers had faded, and all the heads gathered as

they ripened. I wished to see if it could be propagated. But most of the achenia are withered—apparently blasted. Some heads, however, show from one to three achenia that are plump and look as if they might grow. Heads of *A. ptarmicoides* and *S. Riddellii* gathered at the same time are found to have generally perfected their fruit. On comparing the fruit with that of *A. ptarmicoides* it is seen to be quite identical, smooth, light-colored and of the same size. That of *S. Riddellii* is slightly roughened under a lens, and is characteristically marked by five to seven dark-colored longitudinal stripes. Some of the achenia of the anomalous plant seem a little striped, but very faintly, so that it can hardly be relied on for a character. The involucre is smaller and more cylindrical than in *A. ptarmicoides*. The scales are about the same as in that species.

The plant has been left where it grew, so that it may be noticed another season, and its behavior observed. The interest of the plant to me is whether *Aster* and *Solidago* will cross, especially in the wild state, and should the cross be permanent and capable of propagation by seed, what bearing it may have on the origin of species. It can not indeed be proved that it is a hybrid, but this seems the best explanation now available. Had all the flowers been yellow, or even ochroleucous, it might seem a pure example of one or the other genus, but with flowers of three colors from the same root, and other intermediate characters, it is hard to regard it as such. The flowers, in color and size, are a mean between *A. ptarmicoides* and the Solidagos, others, besides *S. Riddellii*, being near neighbors, as *S. nemoralis*, *S. lanceolata*. It should be added in passing that the prairie here was originally wet, but the opening of streets and railroads, with accompanying ditches and sewers, has drained it so as to produce a promiscuous mingling of wet land and dry land floras, as far as they are able to accommodate themselves to the change, and hence queer floral neighbors are found.

It is possible this plant may throw some light on the *Aster lutescens* of Torrey and Gray's Flora of North America, gathered by Douglas and assigned the habitat: "Saskatchewan, dry elevated grounds of the Assiniboia River." It is stated that Douglas had labeled his specimens "flowers yellow," but that the rays appeared to have been at most ochroleucous. "If this be the case," the authors add, "it is doubtless a distinct species, if not, it may prove to be only a variety of *A. ptarmicoides*, as Hooker supposes."—E. J. Hill, *Englewood, Ill.*

Morphological Notes.

1. *Juglans cinerea* and *J. nigra* are both possessed of winter buds composed of entire transformed leaves. The buds under consideration are the terminal buds. The scales in the former species (Fig. 1) are somewhat tapering, although thick and broad throughout their entire length. Those of the latter (Fig. 2) are broad at either end, but contracted at the center. In both cases a series of narrow grooves, running parallel from the raised ridge in the middle to the edges on either side, indicate the leaflets of our transformed leaf. This portion, however, is confined to the tip; hence the greater part of these scales must be composed of the *common petiole* of a compound leaf.

Fig. I

Fig. II

2. The same structure is visible in *Fraxinus quadrangulata*, Mx. In this case the buds are not long, as are those of *Juglans*, but short and conical. The outer scales (Fig. 3) show the same ribbed structure, indicating leaves. In this case we again have scales composed chiefly of the common petioles of compound leaves, but the leaflets still remain attached in a rudimentary condition, as in the case of *Juglans*.

Fig. III

3. In *Negundo aceroides* the scales (Fig. 4, a) are of an ovoid shape, and bear at the tip three small leaflets, which, however, shrivel up and fall off in winter, leaving a scar on each scale at the tip (Fig. 4, b). In this plant, therefore, the scales consist only of the remaining common petiole of a compound leaf. In other members of the genus *Fraxinus*, where indications of leaflets never appear, the scales may be considered as composed only of the common petiole, the leaflet being obsolete.

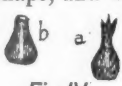


Fig. IV

4. *Sassafras officinale* has scales bearing such plain veins that we may confidently attribute their origin to the blades of leaves.

5. In *Smilax hispida* the petioles remain during winter half surrounding the bud and acting as one of the outer scales of the hibernaculum (Fig. 5). The tendrils, which are transformed stipules, also remain, being attached to the petiole. The remaining scales composing the proper envelopes of the hibernaculum, in this case, may be considered the bases of petioles, much changed in their new capacity.

Fig. V

6. The thorns of *Robinia* are known to be stipules; those of *Gleditschia*, branches; those of some *Astragali*, petioles; those of the Barberry the veins of the leaves. (See Gray Struct. Bot.)

7. A study of the Osage orange, *Maclura aurantiaca*, shows its thorns to be transformed branches. Tiny notches toward the tip often indicate nodes on this branch. At the base, on either side, are two scales, only one of which subtends a bud, the other being empty. These are at the two lower nodes of the metamorphosed branch. On growth of the young bud into a branch it pushes the thorn aside, so that this appears to be axillary to the young branch in the axis of the really empty scale at its side.

8. The spines of *Ribes Cynosbati* are mere outgrowths of the bark, as are also those of the *Smilax* above mentioned, and therefore are of no morphological importance.

9. In *Sambucus Canadensis* the buds consist of short but broad scales which already subtend several axillary buds, as well as aid in protecting the large central bud which is to furnish the main shoot. A single bud, however, which sometimes appears beneath the central bud, seems to have no connection with it, and I can not find that it is subtended by a scale. It however originates in the same tissues with the larger bud, and the connection with it may be traced beneath the bark. Can they, in such cases, be strictly said to be superposed?

10. In *Lindera Benzoin* two branches, superposed in the axils of last year's leaves, each terminate in a leaf bud and have two lateral branches which are flower buds. In spring the lateral buds blossom, and the terminal buds are at liberty to develop into branches, but the upper one generally gets the start, and the other dies. In this way we have extra-axillary branches.

11. The development of the bud scales of the dogwoods in spring is quite interesting. In *Cornus florida* each scale represents the *tip of a leaf*, and in spring it shows its character by developing at the base into a broad petaloid blade, which bears the withered scale at its tip. In this condition the scales serve as an involucre to the condensed cyme (glomerule) within. The closely related *C. Canadensis* has a similar involucre, which, however, never served as scales, being enclosed with the leaves in a subterranean hibernaculum, and having developed from it on the approach of spring. In this it resembles many other herbaceous perennials. The scales which compose the hibernaculum are almost membranaceous, and represent the *entire blades* of leaves. As far as can be observed from a few specimens, the growth of the stem from year to year is sympodial. First a terminal bud

develops into a flowering stem; after flowering this dies, but at its base two opposite buds have been formed, only one of which develops the following season, and this manner of growth is continued from season to season.

12. In *Viburnum nudum* the bud scales are composed of the bases of leaves, their morphological nature becoming evident by the development of leafy tips or blades in spring. (Fig. 6, outer scale; fig. 7, inner scale.) These leafy tips are formed on the scales of both leaf and mixed buds, but owing to the falling off of the more evident broader scales early in the spring while their blades are still quite small, and their consequent non-preservation in herbaria, the fact is generally overlooked. The development of the base here before the tip of the leaf forms an exception to the usual rule that the development of leaves proceeds from their tips to the base.—AUG. F. FOERSTE, *Dayton, Ohio.*

Fig. 6

Fig. 7

Teratological Notes.

1. *A Botrychium with three fertile segments* —Among the numerous specimens of *B. Lunaria*, Swartz, sent by Mr. S. M. Turner from Afognak Island, Alaska, there is one that has two secondary fertile segments standing on the main fertile segment of the frond. They start from it near its commencement, and are all nearly the same size. All appear fully developed, bearing about the usual number of sporangia.

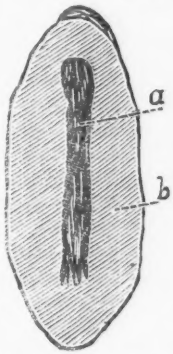
2. *Ludwigia alternifolia with a broad stem* —During the past August I found a specimen of this species in which the upper half of the stem was only about one eighth of an inch thick, while in breadth it measured from one-half to an inch. It sent out, at the sides, short flower bearing branches. The plant grew in a swamp, was nearly four feet high, and otherwise thrifty.

3. *Ranunculus repens with flat peduncles.*—During the past summer I found several examples of this species in which the peduncle was flat, and bearing on its top an irregular mass of petals.

4. *Two Oaks grown together.*—Within three miles of Mt. Carmel (Ill.) there is an Oak (*Q. palustris*, Du Roi), which commences with two roots; these are so close together and intergrown as to appear as one at the surface of the ground. The

two bodies, however, start separately and are several inches apart for nearly ten feet, when they unite and form a single straight trunk, making, in all a tree nearly seventy feet high. The two trunks, where they are separate, are about six inches in diameter, round, straight, and appear to be solid and perfect.

5. *Blighted Hickory-nuts* —During the winter of 1881-2, I found a number of what I take to be blighted hickory-nuts. Besides those that I found several were brought to me as matters of curiosity, and all were similarly deformed. The accompanying sketch will probably help to convey the best idea of them. The central part (a) is hard and solid and is imbeded in a cavity which is just large enough to contain it. It is everywhere free, except at the lower end, from which it appears to have grown I take it to be the kernel lignified. The endocarp (b) is thicker than usual, solid, and very hard. The nut appears to be the proper length, but too slender. All the examples I saw I took to be fruit of *C. sulcata*. While I have cracked a goodly number of hickorynuts every winter for nearly thirty years, this was the only season in which I noticed this deformity. May it not be that the long drought during the previous summer, which continued from the last weeks in June to the first of September, was the cause of this growth?



6. *A Butternut imbedded in the solid wood of an ash tree.*— While waiting in the office of my friend, Dr. A. J. McIntosh, I was shown a piece of ash wood in which was firmly imbedded a veritable butternut. The wood that had formed around it appeared to be healthy and firm when cut. The exocarp was gone, but the wood in its growth had fitted itself into the interstices of the endocarp. The Doctor, who is a Jacksonian Democrat, explains it in this wise: During war times one of the "butternuts" was so closely pursued by a "home guard" that he took the first hole he could find, and this happened to be a wood-pecker's hole in an ash tree.

7 *Double Tulips* —Several years since I was invited by a lady friend to call and see some double tulips. Before starting, I stated that I did not think they could be doubled more than one and one-half times, thinking that the six stamens and three pistils had been developed into petal-like organs. But to my surprise I found the tulips as double as any rose. I was at a loss to

explain the condition, until after examining the scape, which I found to be leafy, especially at the top, and the upper leaves took on the shape and color of sepals and petals. I can not believe that this was a deformity, the result of an injury, as there were several plants in the same bed in the same condition. I would like to ask, is the conversion of leaves into petal-like organs a common method by which flowers are doubled?—J. SCHNECK, *Mt. Carmel, Ill.*

GENERAL NOTES.

Hibiscus Moscheutos and H. roseus.—Dr. J. Guillaud, of Bordeaux, sends a pamphlet containing his investigations resulting in the indentification of *Hibiscus roseus* of Thore,—a species supposed to be indigenous to the southeastern coast of France, also found in Italy,—with our marsh Hibiscus. He is not aware that the same identification has been made by Mr. Daydon Jackson, and published a year or two ago in the 19th volume of the *Journal of the Linnæan Society*, London. Dr. Guillaud has had the advantage of seeing the two plants growing spontaneously, ours in the neighborhood of New York, the other in the marshes of the Landes. *H. roseus* has also been found in Northern Italy, in the marshes of the Po and lagunes of the Adriatic; and, according to Dr. Guillaud, specimens have been received from Asia Minor, but no mention is made of it in Boissier's Flora Orientalis. Is this species indigenous to Europe as well as to the Atlantic coast of North America? Is it a survival from the time when the floras of Europe and of Eastern America had more common elements than they now have? Or has it somehow been conveyed across the Atlantic; and if so, whether at some early period or within historic times? Questions not easily answered. If the first, then this plant, like a few others that might be named, is in Europe what *Convallaria majalis, Littorella lacustris, Marsilea quadrifolia, Scolopendrium*, and perhaps *Calluna*, are in North America. In favor of the second view, and even of a late and casual introduction, it is to be said (as Dr. Guillaud notes) that Thore found the plant on the coast of France only at the beginning of this century; that it was unknown to Tournefort, who botanized around Bayonne in the autumn of 1688; that the plant has disappeared from the particular station where Thore found it and where it was said to abound; and that it is now more rare than formerly. Its spread from the Atlantic coast to that of the Adriatic, may be owing to the carriage of seeds by marsh-birds. Indeed, Dr. Guillaud thinks it may have been brought to Europe by sea-birds. On the other hand, since it is now found in the district near Mantua, he quotes the lines in Virgil's Eclogues in which the stems of *Hibiscus* are twice mentioned, in a way by no means *mal à propos*; but he thinks they might as well apply to Marsh-mallow.

It appears that the specific name *Moscheutos* came to Linnæus through Cornuti from a "Rosa Moscheutos" of Pliny, some kind of Rose-mallow, we may suppose. Since the two Linnæan species are clearly one, it is a pity that the

name *H. palustris* was not chosen. Torrey and Gray are responsible for that. The reason of the choice was, that *H. Moscheutos* stands first in the book, and *H. palustris* is merely differentiated from that; reasons which need not have prevailed. A. GRAY.

Stipules in Saxifragaceæ are of small account, as Prof. Coulter's pupils show, by sending *Mitella diphylla* with good stipules between the cauline leaves. It seems to be regularly so.—A. GRAY.

Notes on Æsculus glabra.—One of my botany class, Mr. J. W. Milligan, has been making some observations upon the flowers of this Buckeye which seem worth recording. It is well known that the flowers tend to be polygamous, not so much from the suppression of stamens or pistils, as that they fail to develop; at least this is the way the tendency manifests itself with us. All the perfect flowers furnish good examples of protogyny, while others at first sight seem protandrous, but this latter is seen to result from a failure of the pistil to develop. In fact the forms seem so various that one is at first at considerable loss how to "place" them. The flowers are apparently in a transition state and on the way to becoming monœcious. Mr. Milligan observed that the clusters were visited by numerous bees, principally the honey bee, but that they avoided the opened flowers, and only sought the well advanced buds. The petals so poorly protect the nectar that it is easily obtained by thrusting the proboscis between them. The question was at once suggested whether this could in some measure account for the numerous sterile pistils, which far outnumber the fertile ones. The open flowers were avoided and could only have been fertilized by the chance of being near the buds, for the bees had evidently learned that the latter contained the nectar. This would necessarily result in some sterile pistils, which might lead to polygamy in effect, if not in fact. But what would lead to a suppression of stamens and so make polygamy end in monœcism would be hard to say. At any rate, it is a case of an insect attracted by a flower which it does not visit but may accidentally fertilize, and obtaining nectar from a flower which it can neither fertilize nor obtain pollen from.—J. M. C.

Lar : Toxicodendron.—I have found at Dayton a specimen of *Rhus Toxicodendron* measuring, some distance above the base, 17 inches in circumference or about 5½ inches in diameter. Its first branch was 14½ inches in circumference. Another branch was 4 inches in diameter. The specimen is remarkable for its strong and vigorous growth, and twines upon an almost dead locust tree, clothing it with the foliage of the Poison Ivy. It is close to the city and is destined to become quite an attraction to our amateur botanists. —AUG. F. FOERSTE, *Dayton, O.*

Vincetoxicum.—Following some authority, which it is now not worth while to look up, it appears that in the Synoptical Flora of N. America, I had derived this name from "*vinceus*, that serves for binding," and *toxicum*. Dr. Hance, in *Britten's Journal of Botany* for May, 1883, notes, 1, that the only authority for this adjective is a line of Plautus in which *vincea* is now known to have been a mistake of some copyist for *juncea*. And, 2, that the old herbalists, Fuchs and Matthiolus, clearly indicate that the Latin part of this hybrid name is from *vincere*, to conquer.—A. GRAY.

Notes on Fresh Water Algæ.—To my note under this heading in the last GAZETTE I wish to add that it may be a question whether *Rivularia fluitans* should not be referred to *Echinella articulata*, Ag. That species is known to me only through the figure in English botany and the figure given by Phillips in *Grevillea*, Vol. IX., pl. 144, a-d. From the figure in Eng. Bot. not much information can be derived, but from that in *Grevillea*, which appears to be referred without hesitation to *Echinella articulata*, Ag., one can not fail to see a close resemblance to the alga collected by Prof. Arthur, with which it also agrees in its peculiar habitat.—W. G. FARLOW.

Chloranthy of Ranunculus Californicus.—Green Buttercups are unusually common about San Francisco Bay this season. The persistent floral organs (excepting the almost normal yellowish stamens) are as green as the ordinary foliage. The spoon-shaped sepals are not reflexed; the hairy petals have ovate blades only two lines long, borne on slender petioles three to six lines in length. The nectariferous scales are plainly seen at the bases of the blades. Most of the capellary leaves become stipitate empty akenes, but some are open on the inner side, and a few become oblanceolate leaves two or three lines in length.—VOLNEY RATTAN, *San Francisco, Cal.*

Discharging Ascospores.—In the January No. of the GAZETTE appeared an interesting account of the sound of discharging ascospores observed by Mr. E. W. Holway, Decorah, Iowa. I have this spring heard the same hissing sound on opening a box in which a number of *Peziza coccinea, Jacq.*, had been inclosed for two hours.

I transcribe an extract from a letter written by the distinguished botanist Haller, Gottingen, Sept. 19, 1740, to the father of botany, Linnæus, Upsal, Sweden: "The place where I am is but a barren field for botany excepting fungi, which are plentiful. I have detected a very curious elastic motion in the common sessile *Peziza*, of a dirty white hue. The whole plant contracts spontaneously and discharges a powder upwards with a sort of hissing sound. This doubtless is the seed." He furthermore says that "fungi are a mutable and treacherous tribe;" a fact just as apparent to-day as it was 143 years ago.—L. V. MORGAN, *Cincinnati, O.*

EDITORIAL NOTES.

SINCE THE NOTICE in the GAZETTE of the appearance of a supplement to Chapman's Flora, many inquiries have been made regarding it. A note from Dr. Chapman conveys the information that the new edition is now on sale with Ivison, Blakeman, Taylor & Co., N. Y., and Ashmead Bros., Jacksonville, Fla. The supplement is not sold separately, but is bound with the new edition.

MR. W. B. HEMSLEY, of the Kew Gardens, is preparing a work which will be practically a flora of the remote islets of the Atlantic and Southern Oceans. With regard to the Bermudas it may be that some of the readers of the GAZETTE may be able to give some help. The composition of the flora of the Bermudas

is found to contain more of the endemic element than was anticipated; and, among other things, it is suspected that there is at least one palm quite different from the continental American species. Good specimens of the native palm or palms would be very thankfully received at Kew, and any reader of this notice who will send such specimens will be doing a favor to botanists in general.

THE OTTAWA FIELD NATURALISTS' CLUB is an organization that it would be well for some of the brethren of the "States" to pattern after. It was established in 1879, and has now entered upon its fifth season of field work, the object being an exhaustive study of the natural history of Ottawa and vicinity. Transactions have already been published containing numerous lists. Excursions are made monthly, and leaders are appointed in each department who are looked to for information and assistance, and who have charge of the excursions of their department. The leaders in botany are R. B. Whyte and J. Fletcher for Phænogams, and Prof. J. Macoun for Cryptogams, Messrs. Whyte and Macoun being also the Vice-Presidents of the Club. Information as to the workings of the Club may be had by addressing the Secretary, W. H. Harrington.

AT THE LAST ANNUAL MEETING of the Syracuse Botanical Club the following officers were elected for the ensuing year: President, Mrs. Lillie Barnes; Vice-President, Mrs. Nellie Goodrich; Recording Secretary, Miss Mary Hotchkiss; Corresponding Secretary, Mrs. H. S. Gifford; Treasurer, Miss Hattie Leach.

DR. MASTERS has described before the Royal Horticultural Society a Malvaceous plant said to be a cross between *Hibiscus Rosa-sinensis* and *Abutilon striatum*, the former genus furnishing the pollen. The plant has the flower characters of *Abutilon*, but the truncated column and foliage of *Hibiscus*.

IN THE DESCRIPTION of *Phallus togatus*, Kalchbrenner, in the May GAZETTE, two errors are noted. In the measurements, "m. m." should be "μ"; and "parvio" should read "pervio."

MR. THOMAS MEEHAN has discovered sensitive stamens in *Echinocactus Whipplei*. This has long been known in our common *Opuntia*, but in this *Echinocactus* the motion is not so great, nor so immediate after the stimulus.

THE FOLLOWING SUMMARY by Mr. Bentham, taken from the *Jour. Bot.*, of the number of phanerogamic plants known to science is especially interesting now that the last volume of the *Genera Plantarum* has appeared:

	Orders.	*Genera.*	*Species.*
Polypetalæ	82	2,610	31,874
Gamopetalæ	45	2,619	34,556
Monochlamydeæ	36	801	11,784
Gymnospermæ	3	44	415
Monocotyledons	34	1,495	18,576
Totals	200	7,569	97,205

PROF. J. G. LEMMON has read before the California Academy of Sciences a very interesting paper upon his discovery of the potato in Arizona, noticed before in these pages. Professor Lemmon's supply of potatoes has been exhausted, but he is off again to the Huachuca Mountains this fall for a fresh supply, which various cultivators will experiment upon.

BARON FELIX THÜMEN has offered his rich Mycologic Herbarium for sale. In all it probably contains 20,000 species, from all parts of the world; many of them types, and most of them bearing the labels of the most distinguished mycologists of this country and Europe. The "Mycotheca Universalis" is to be continued. Baron Thümen can be addressed at Vienna, Währing, Schulgasse 1.

ARTICLES IN JOURNALS.

BAILEY, W. W.—Mosses, *Am. Nat.* 17. 608.
BAKER, J. G.—Two new Carices from Central Madagascar (with plate), *Jour. Bot.* 21. 129: Synopsis of the genus Selaginella, continued (2 new species). l. c. 21. 141.
CELAKOVSKY, DR. L.—Upon some species of the genus Thymus, *Flora*, Mar. 11, continued April 1.
COOKE, M. C.—On Sphærella and its allies, concluded (6 new species, 2 from U. S.), *Jour. Bot.* 21. 136.
DETMER, W.—Review of Adolph Mayer's paper "On the theory of chemical ferments," *Bot. Zeit.* April 6.
FISCHER, A.—On cell division in Closterium (with plate), *Bot. Zeit.* April 6.
GOODALE, GEO. L.—Color and Assimilation (a note upon Th. W. Engelmann's device for measuring the assimilative activity of vegetable cells by the effect of the liberated oxygen upon bacteria), *Science*, 1. 332: On the development of chlorophyll and color granules (remarks upon the recent papers of A. F. W. Schimper in Bot. Zeit.), l. c. 1. 421.
GRAY, ASA.—Notice of Engler's "Essay on the development of the vegetable kingdom, especially on the distribution of floras since the Tertiary period." *Am. Jour. Sci.* 3. 25. 394; with J. HAMMOND TRUMBULL, Review of De Candole's "Origin of cultivated plants," with annotations upon certain American species, Part II., l. c. 3. 25. 370.
GREENE, E. L.—New plants (5, chiefly from the Pacific coast), *Torr. Bull.* 10. 41.
HANCE, H. F.—A Chinese Clethra, *Jour. Bot.* 21. 130.
HEMSLEY, W. B.—On the relations of the fig and the caprifig, *Nature*, 27. 581: A new Afghan plant (a Tanacetum), *Jour. Bot.* 21. 135.
HOFFMANN, DR. H. and DR. EGAN IHNE.—Time of blooming of Phenogams, *Flora*, March 1.
IHNE, DR. EGAN.—See under "HOFFMANN."
KOEHNE, E.—Review of J. G. Baker "On contributions to the flora of Central Madagascar," *Bot. Zeit.* March 23.
KRAUS, Carl.—Investigations upon the sap-pressure of plants (concluded), *Flora*, March 21.
NYLANDER, W.—New addenda to the lichenography of Europe, *Flora*, March 1.
PRENTISS, A. N.—Notes on the Adirondacks, *Torr. Bull.* 10. 43.
REHM, DR.—Review of "Exsiccata of Hungarian Fungi," *Flora*, March 1.
REINSCH, P. F.—On the alga-like and peculiar one-celled bodies in the coal of Central Russia (2 plates), *Flora*, March 11.
SCHRENK, JOSEPH.—Notes on the haustoria of some N. Am. parasitic phanerogams (Comandra umbellata) (with 3 plates), *Torr. Bull.* 10. 37.
SPENCER, JAMES.—Recreations in Fossil Botany, No. IX. (Reproductive organs of fossil plants), *Sci. Gossip*, No. 221. 100.
TRIMEN, HENRY.—Cinchona Ledgeriana (a reply to certain remarks by Dr. Kuntze in the Jan. No.), *Jour. Bot.* 21. 131.
TRUMBULL, J. H.—See under "GRAY."
TSCHIRCH, A.—Review of H. Heyfelder's paper on "Pharmacognosy of the Vegetable Kingdom," *Bot. Zeit.* March 23.
TUCKERMAN, EDWARD.—A new Ramalina (California), *Torr. Bull.* 10. 43.
VASEY, GEO.—Two new species of grasses (Stipa from Oregon, and Aristida from S. Arizona), *Torr. Bull.* 10. 42.
WARD, LESTER F.—Plant-life past and present, (Synopsis of one of the "Saturday lectures" delivered at the Nat. Mus. Washington), *Science*, 1. 338.
ZACHARIAS, E.—Upon Albumen, Nuclein, and Plastin, *Bot. Zeit.* March 30.